

Supplemental Memorandum

To: STATE BOARD MEMBERS **Date:** June 11, 2003

From: Geno Flores, Deputy Superintendent, Assessment and Accountability Branch

Re: ITEM # 16

Subject: 2003 ACADEMIC PERFORMANCE INDEX (API) MODIFICATIONS:
INTEGRATING RESULTS FROM CALIFORNIA'S STANDARDS-BASED
TESTS IN SCIENCE INTO THE API; AND, SIMILAR SCHOOLS AND THE
API GROWTH REPORT.

Please insert the following attachment:

Attachment 1: [2003 Base Academic Performance Index \(API\) Modifications: Integrating Results from California's Standards-Based Tests in Science into the API; and, Similar Schools and the API Growth Report \(Pages 1-20\)](#)

**2003 Base Academic Performance Index (API) Modifications:
Integrating Results from California's Standards-Based Tests in Science into the API; and
Similar Schools and the API Growth Report**

The Technical Design Group (TDG) for the Public Schools Accountability Act (PSAA) Advisory Committee developed a report in April 2003 with recommendations on four issues to be resolved in conjunction with integrating the California Standards Test in Science (CST Science), grades 9-11, into the 2003 Base Academic Performance Index (API). The PSAA Advisory Committee met on April 24, 2003 and agreed with the TDG that the CST Science should not be included in the API.

The State Superintendent of Public Instruction (SSPI) *does not concur* with the TDG and PSAA Advisory Committee's recommendations and believes that the CST Science *should be* included in the 2003 Base API. Following is a summary of the TDG and PSAA Advisory Committee's recommendations followed by a California Department of Education (CDE) analysis and the SSPI's recommendations.

TDG Recommendations

The TDG recommended the following:

- Not include CST Science results in the 2003 Base API.
 - The CST Science is not universally-administered to all students at a grade level, and this creates strong technical reasons for not including it in the API.
 - None of the seven options considered to account for non-universal test results provide an optimal technical approach.
- Include Core Knowledge Science Test results in the API as soon as it is available.
 - The high school results could be incorporated as early as 2007.
 - There appear to be few, if any, technical constraints that would limit including the test in the API since the test is to be universally administered to all students at a grade level.
- If the CST Science results were to be included in the 2003 API Base, the weight of the CST Science indicator should be set as low as possible.

PSAA Advisory Committee Recommendations

The PSAA Advisory Committee recommended the following:

- Agreed with TDG to not include CST Science results in the 2003 Base API.
 - The operational challenges to include the CST Science are significant.
 - Adding the CST Science to the API would involve adding incentives to increase CST Science participation, concurrent with already-adopted incentives for increasing CST Math participation. The effectiveness of such incentives is uncertain, and including additional incentives would add to the burden and pressures schools and districts are already facing.
- Agreed with TDG to include Core Knowledge Science Test results in the API as soon as it is available.

CDE Analysis

The CDE appreciates the concerns of those who point out that the science tests are not universal indicators: not all students in high school take the tests. As a result, including these tests in the API presents significant operational challenges, particularly in how to treat students who do not take these tests when calculating the API.

However, there are sound policy and educational reasons that overshadow the operational concerns:

- Currently, science results from the CAT/6 are included in the API, although the results contribute only 3% in the total API calculation (see Table 1 “2002 Base API”, page 3).¹ Keeping science at 3% of the API, while justifiable from an operational standpoint, sends out a misleading message to science educators and the public at large that science education is not important.
- The question arises of why we spend so much time and expense in administering end-of-course science exams to students if we do not value the results enough to include them in the API. This question is particularly pointed in this era of budget shortfalls and fiscal constraints.
- The exclusion of end-of-course results implies that we give at least some value to results from the short survey science portion of the CAT/6 while dismissing totally the results from the more demanding standards tests.
- Since we have added end-of-course mathematics tests to the API using a similar methodology, we cannot argue that it simply is too difficult to add similar tests in science.

While the implementation of the generic Core Knowledge Science Test at the high school level will provide valuable information about the knowledge and skills that all secondary students should possess, results of that test will give only part of the picture of standards-based science education in California. Specifically, it will not consider how well students are meeting the current state content and performance standards in science that the State Board and science educators have devoted so much time and effort in developing. Finally, the Core Knowledge Science Test will not be fully implemented until 2007.

SSPI Recommendations

The SSPI recommends the following:

- CST Science should be added to the 2003 Base API. Since the Core Knowledge Science Test is not yet implemented, the CST Science would consist solely of results from the current end-of-course tests.
- Results from the Core Knowledge Science Test should be added to the API as soon as available.
- In establishing the weight to give to results from the end-of-course science tests, the SBE should give careful consideration to minimizing any fluctuation in the API caused by the fact that the indicator is not universal. Specifically, the SSPI considers weight Option 3 (see Table 1, page 3) to strike the best balance between policy and technical concerns.

¹ The indicator weight for science was reduced from 20% to 3% in the 2002 Base API in order to reduce the weight of the norm-referenced portion of the API due to the change from the Stanford 9 to the CAT/6.

- Finally, the SSPI believes the issue of non-tested students in end-of-course science tests should be handled in the same manner as non-tested students in end-of-course mathematics tests: students who do not test should be assigned a minimal score of 200 in calculating a high-school's science component of the API. This consistency of practice will facilitate ease of communication with districts and schools and make the API easier to understand by educators and the public. It will also provide an incentive for high schools to enroll students in rigorous and standards-based science courses. (This is Option 2 in the April 2003 TDG report, pages 8-9 and 11.)

Table 1
Three Options for API Weights for
Integrating CST Science into the 2003 Base API
High Schools (Grades 9-11)

Content Area	2002-2003 API Cycle			2003-2004 API Cycle			2003-2004 API Cycle			2003-2004 API Cycle		
	2002 Base API Final Weights			2003 Base API Option 1 20% SCIENCE			2003 Base API Option 2 14% SCIENCE			2003 Base API Option 3 8% SCIENCE		
	NRT	CST	CAHSEE	NRT	CST	CAHSEE	NRT	CST	CAHSEE	NRT	CST	CAHSEE
English Language Arts (ELA)												
ELA NRT (Reading) (Language)	6% (3%) (3%)			6% (3%) (3%)			6% (3%) (3%)			6% (3%) (3%)		
ELA CST		35%			24%			28%			32%	
CAHSEE ELA			10%			10%			10%			10%
Mathematics												
Math NRT	3%			3%			3%			3%		
MATH CST		18%			12%			14%			16%	
CAHSEE MATH			5%			5%			5%			5%
Science												
Science NRT	3%			3%			3%			3%		
Science CST		---			17%			11%			5%	
Social Science												
Social Science NRT												
Social Science CST		20%			20%			20%			20%	
TOTAL	12%	73%	15%	12%	73%	15%	12%	73%	15%	12%	73%	15%
				<ul style="list-style-type: none"> Restores science weight to former level Decreases the ELA and Math CSTs to former levels 			<ul style="list-style-type: none"> Avoids drastically reducing ELA and Math CSTs Provides future flexibility when adding Core Knowledge Test 			<ul style="list-style-type: none"> Least change to ELA and Math CSTs Greatest flexibility for adding the Core Knowledge Test Agrees with TDG that weight be as low as possible 		

Integrating Results from California's Standards-Based Tests in Science into the Academic Performance Index (API)

*A Report of the Technical Design Group
to the Public Schools Accountability Act Advisory Committee*

April 2003

Summary

Integrating Results from California's Standards-Based Tests in Science into the Academic Performance Index (API)

The Technical Design Group (TDG) for the Public Schools Accountability Act (PSAA) Advisory Committee has identified four issues that must be resolved to integrate standards-based science test results into the Academic Performance Index (API). These issues include:

5. Should the California Standards Test in Science (CST Science) be included in the 2003 API Base?

Recommendation: Because the CST Science is a test not universally-administered to all students and is a course-specific test, there are strong technical reasons for not including it in the API. The TDG concluded that not adding the CST Science to the API provides the better technical approach. However, it also recognized that not including a standards-based science test in the API until 2007 when the Core Knowledge Science Test is available may not be the best policy approach. The PSAA Advisory Committee and SBE will need to consider the trade-offs between the technical issues and the policy demands. The advantages and disadvantages of including or not including the CST Science in the 2003 API Base are listed in Table 1 on pages 7-8.

6. If the CST Science is included in the 2003 API Base, how should the results of students with no score on the CST Science be accounted for in the 2003 API Base?

Recommendation: The TDG considered seven options for including the CST Science in the 2003 API Base. Each option proposes different methods for handling students with no scores on the CST Science (i.e., the problem of non-universal test results). The TDG concluded that none of the options provide an optimal technical approach to address the problem of non-universal test results. Therefore, the TDG does not recommend including the CST Science in the API. The advantages and disadvantages of the seven options are listed in Table 2 on page 11. The TDG was undecided about which option might be considered relatively the most technically sound. Nevertheless, if policy demands that the CST Science be included in the 2003 API Base, the TDG recommends that the weight of the CST Science indicator be set as low as possible.

7. If the CST Science is included in the 2003 API Base, should the inclusion of the CST Science in the API be maintained or eliminated once the Core Knowledge Science Test is included in the API?

Recommendation: If the CST Science were to be included in the 2003 API Base, the TDG believes the weight of the CST Science indicator should be set as low as possible. If the indicator weight were minimal, the TDG has no recommendation about whether to maintain or eliminate the CST Science from the API once the Core Knowledge Science Test is included in the API. This should instead be a policy decision of the SBE based upon consideration of recommendations by the PSAA Advisory Committee. If the indicator weight for the CST Science were substantial, the TDG recommends either reducing the indicator weight to a minimal level or eliminating the CST Science from the API.

8. When should the Core Knowledge Science Test be included in the API?

Recommendation: Based upon the current plans for development of a Core Knowledge Science Test, there appear to be few, if any, technical constraints that would limit including the test in the API, once the test is available. Therefore, the TDG recommends including the Core Knowledge Science Test in the API as soon as it is available. The elementary results for grade 5 could be incorporated into the API as early as 2004, and the middle and high school results could be incorporated as early as 2007. Adding the Core Knowledge Science Tests to the API will be easy technically because the test will be universally administered to all students at a grade level.

Integrating Results from California's Standards-Based Tests in Science into the Academic Performance Index (API)

A Report of the TDG to the PSAA Advisory Committee

The Public Schools Accountability Act (PSAA) of 1999 (Chapter 3, Statutes of 1999) requires that the State Superintendent of Public Instruction (SSPI), with approval of the State Board of Education (SBE), develop an API to measure the performance of schools. The law also provides for an Advisory Committee to assist the SSPI and the SBE in the creation of the Index. The Committee established a Technical Design Group (TDG), comprised of educational measurement specialists, to provide guidance on technical issues. The TDG developed this report.

The purpose of this paper is to evaluate the alternatives for incorporating standards-based science tests into the Academic Performance Index (API). The paper, organized into four sections, provides the following:

- Description of the background of current standards-based science tests
- Guiding principles for incorporation of indicators into the API
- Issues to be resolved
- Evaluation and recommendations on the resolution of each issue

Background

Current standards-based test: CST Science (grades 9-11, course-specific)

Under the Standardized Testing and Reporting (STAR) program (Sections 60640-60648), California students, grades 9-11, take the norm-referenced test in science for their respective grade level. The California Standards Test in Science (CST Science) is a course-specific test and is not universally administered to all students in grades 9-11. Students in grades 9-11 are required to take the CST Science if they have completed the standards-based science courses between the previous summer school and the end of the school year of testing. Otherwise, the student does not take the CST Science. The CST Science refers to *all* of the following tests according to grade level or discipline:

- Biology/Life Science
- Chemistry
- Earth Science
- Physics
- Integrated Science 1 Biology/Chemistry/Physics (BCP)
- Integrated Science 2 Earth Science/Biology/Chemistry (EBC)
- Integrated Science 3 Earth Science/Biology/Physics (EBP)
- Integrated Science 4 Earth Science/Chemistry/Physics (ECP)

Science teachers are required to carefully match the test blueprints to their course content to order the most appropriate test for their students. If a science course is not closely aligned with a test blueprint, no science test should be administered. Performance standards for CST Science have been adopted by the SBE, including those for Integrated courses.

The PSAA requires the inclusion of results from the standards-based component of the STAR exam in the API [Section 52052(a)(3)].

2002 Participation rates (Stanford 9 Science and CST Science)

The following chart shows the Standardized Testing and Reporting (STAR) Program science tests administered in 2002 to students in grades 9-11 and participation rates for each test.

2002 STAR Participation Rates in Science, Grades 9-11

Science Test Administered		Grade 9	Grade 10	Grade 11
<i>Norm-referenced test</i>				
Stanford 9	Number Tested	438,988	395,241	342,441
<i>CST Science</i>				
Biology/Life Sciences	Number Tested	87,995	164,730	45,750
	% of Stanford 9	20%	42%	13%
Chemistry	Number Tested	2,262	52,382	90,289
	% of Stanford 9	1%	13%	26%
Earth Science	Number Tested	57,885	12,550	9,661
	% of Stanford 9	13%	3%	3%
Physics	Number Tested	10,693	6,440	24,629
	% of Stanford 9	2%	2%	7%
Integrated 1 (BCP)	Number Tested	3,626	9,136	3,698
	% of Stanford 9	1%	2%	1%
Integrated 2 (EBC)	Number Tested	21,796	12,219	4,974
	% of Stanford 9	5%	3%	1%
Integrated 3 (EBP)	Number Tested	12,497	9,951	3,022
	% of Stanford 9	3%	3%	1%
Integrated 4 (ECP)	Number Tested	39,513	9,639	7,934
	% of Stanford 9	9%	2%	2%
Totals, CST Science	Total CST Science # Tested	236,267	277,047	189,957
	% of Stanford 9	54%	70%	55%

For 2002 in grades 9-11, the Stanford 9 science test was a 40-item test, and the CST Science was a 60-item test. In 2003 for grades 9-11, the CAT/6 science test will be a 25-item test, and the CST Science will be a 66-item test.

Proposed standards-based test: Core Knowledge Science Test (universal)

Beginning in 2007, the No Child Left Behind (NCLB) Act of 2001 requires each state to administer at least once in grade spans 3-5, 6-9, and 10-12 standards-based science tests each year. All students will participate in these assessments at the specified grade level within the three grade spans. These tests will measure the fundamental science concepts and skills that all students within the designated grades should know and understand.

Currently, under the STAR Program, the CST Science tests are not grade-specific and therefore do not meet the NCLB requirement. Senate Bill 233 (Chapter 722 of 2001) authorized the State Board of Education (SBE) to develop and implement science tests in at least one elementary or middle school grade. The SBE designated grade 5 for the administration of a standards-based science test, which will be field tested during the spring of 2003 and administered as an operational test in 2004. This test meets the NCLB core knowledge test specifications for the elementary level. The California Department of Education (CDE) has prepared a schedule that addresses NCLB specifications for the development and implementation of Core Knowledge Science Tests at the middle (6-9) and high school (10-12) levels that will result in a universally-administered test by 2007 for the three grade spans.

The NCLB Core Knowledge Science Test will be a generic test of science, focusing on the minimum of science knowledge and skills that all students must possess at the elementary, middle, and high school grade levels to be prepared for high school graduation.

Graduation and CST/UC requirements in science

Graduation requirements for grades 9-12 in science are two courses in science, including biological and physical sciences. CSU admission requirements are two years of science; UC requirements are two years of laboratory science, three years recommended.

Guiding Principles

The methodology that the SBE adopts for the integration of the standards-based test in science must:

1. Be technically sound.
2. Be flexible enough to accommodate the phase-in of other standards tests.
3. Insofar as possible, preserve the present system of API calculation and reporting.

In addition, the properties of the new indicator should, to the greatest extent possible, do the following:

4. Establish the simplest computation for the most common course-grade combinations and additional complexity, if necessary, for more unusual course taking patterns.
5. Provide a neutral method that neither encourages nor discourages course-taking patterns and testing in science.

Issues to be Resolved

The TDG identified four issues that need to be resolved in integrating standards-based tests in science into the API:

1. Should the California Standards Test in Science (CST Science) be included in the 2003 API Base?
2. If the CST Science is included in the 2003 API Base, how should the results of students with no score on the CST Science be accounted for in the 2003 API Base?
3. If the CST Science is included in the 2003 API Base, should the inclusion of the CST Science in the API be maintained or eliminated once the Core Knowledge Science Test is included in the API?
4. When should the Core Knowledge Science Test be included in the API?

Evaluation and Recommendations for Each Issue

Issue #1

Should the California Standards Test in Science (CST Science) be included in the 2003 API Base?

The Academic Performance Index (API): A Six-Year Plan for Development was presented to the SBE in April 2002. The plan reflects an estimated schedule of indicators to be added to the API over several years. It recommends that the CST Science, grades 9-11, be added to the 2003-2004 API cycle, pending SBE approval. At the time the plan was developed, it reflected the available standards-based science tests at the secondary level. Since that time, the NCLB legislation was enacted, and a Core Knowledge Science Test to be universally-administered was planned. As a result, the TDG was asked to evaluate various approaches besides incorporation of the CST Science into the 2003 API Base. The TDG considered the following factors:

- The CST Science is based on discipline-specific tests. Not all secondary students take a test, and those who do, may take 1 of 8 tests (biology, chemistry, earth science, physics, or Integrated 1,2,3, 4). Incorporating a non-universal indicator such as the CST Science into the API complicates the calculation of the API.
- The *API Six-Year Plan* was developed before the enactment of NCLB. The Core Knowledge Science Test will be a universally-administered test but will not be completely ready until 2007.
- Since the Core Knowledge Science Test will be developed, it may be more effective to not include the CST Science in the API at all. However, if the CST Science is not included in the API prior to 2007, it sends the message that science is not important and creates a disincentive for schools to encourage students to take science courses in high school.
- The *API Six-Year Plan* is scheduled to be modified this year and presented to the SBE. It is anticipated that it will be combined with the long-term plan for California's assessment system.

There are strong policy reasons for including the CST Science in the API. The indicator weight for the science NRT was reduced in the 2002 API Base. The CST Science is a technically sound assessment based on high-level state content and performance standards that has been implemented and is currently available. Including the test in the API would support the importance of science in the accountability system.

The TDG was asked to evaluate the technical options for including the CST Science in the 2003 API Base. These options are described in detail in Issue #2 below. The options address the problem of non-universal test administration for the CST Science.

Since including the CST Science in the API would involve the problem of non-universal test administration, the TDG also discussed whether the CST Science should be included in the API at all. This view was the more appealing alternative from a technical standpoint, since a Core Knowledge Science Test will soon be developed that will avoid the problems of non-universal test results of the CST Science. It may be better to wait for the implementation of the Core Knowledge Science Tests and include those results in the API when they become available. The elementary results for grade 5 could be incorporated into the API as early as 2004, and the middle and high school results could be incorporated as early as 2007. Adding the Core Knowledge Science Tests to the API will be easy technically because the test will be universally administered to all students at a grade level.

The advantages and disadvantages of including or not including the CST Science in the 2003 API Base are listed in Table 1.

Table 1
Advantages and Disadvantages of Including/Not Including the
CST Science in the 2003 API Base

<i>Approach</i>	<i>Advantages</i>	<i>Disadvantages</i>
Include CST Science in 2003 API Base	<ul style="list-style-type: none"> ○ Supports the importance of science in the accountability system, particularly since the Science NRT weight in the API was greatly reduced in 2002 ○ Reflects the inclusion of higher-level science content than core knowledge content ○ Provides an incentive as soon as possible for schools to encourage students to take higher-level science ○ Maintains the goal of increasing the quality of high school science courses ○ Is consistent with the timeline of the <i>API Six-Year Plan</i> 	<ul style="list-style-type: none"> ○ No optimal technical solution exists for addressing non-universal test results ○ Adds complexity to the API ○ If gross differences exist in the difficulty across the types of CST Science subject tests (i.e., Physics vs. Biology), the interpretation of results is confounded ○ Would be inefficient and confusing to schools to add the CST Science and then revise or eliminate it in 2007 (when the Core Knowledge Science Test is added to the API)
<i>Approach</i>	<i>Advantages</i>	<i>Disadvantages</i>
NOT Include CST Science in 2003 API Base	<ul style="list-style-type: none"> ○ Provides the best technical solution because it avoids non-universal test results problem ○ Avoids the complexity of adding a non-universal indicator to the API ○ Avoids inefficiencies and 	<ul style="list-style-type: none"> ○ May be viewed as lack of support for the importance of higher-level science in the accountability system ○ Establishes a disincentive for schools to encourage students to take science courses in high school (until the Core Knowledge Science Test is integrated into the API)

	<p>confusion of adding CST Science to the API only to eliminate or revise it in 2007 when the Core Knowledge Science Test becomes available</p>	<ul style="list-style-type: none"> ○ Uses the results of a test that reflects the minimum of science knowledge and skills that all students must possess (rather than the higher-level of knowledge and skills of the state content standards). ○ Is not consistent with the timeline of the <i>API Six-Year Plan</i>
--	---	---

Recommendation: The TDG concluded that not adding the CST Science to the API provides the better technical approach. However, it also recognized that not including a standards-based science test in the API until 2007 when the Core Knowledge Science Test is available may not be the best policy approach. The PSAA Advisory Committee and SBE will need to consider the trade-offs between the technical issues and the policy demands.

Issue #2

If the CST Science is included in the 2003 API Base, how should the results of students with no score on the CST Science be accounted for in the 2003 API Base?

Seven options were identified by the TDG for integrating the results of the CST Science into the 2003 API Base. Each of the seven options addresses the problem of non-universal test results differently and, therefore, each option treats differently students who have no scores on the test. Under any of the options, the Core Knowledge Science Test could be added to the API when it becomes available, as determined by the SBE. Once added, the CST Science indicator weight could be maintained, reduced, or eliminated, as determined by the SBE.

Option 1: Exclude students with no scores

Include the results of students with scores with no adjustments. Students with no score would not be counted in the API.

Comment: This option works well only for universal indicators; it is problematic when the indicator is not universal. In the most extreme case, a school's score could be based upon the performance of a single test taker. In less extreme cases, this proposal contains an undesirable incentive for schools to steer lower-scoring students away from courses that trigger a CST Science.

Option 2: Include students with no scores as 200

As in Option 1, include the results of students with scores with no adjustments. However, students with no score would be included in the API and assigned a weight of 200 (the lowest proficiency level).

Comment: Although it addresses the chief shortcoming of Option 1, this option may be overly punitive. There are legitimate reasons why no CST Science would be taken. (State requirements for high school graduation include only two years of science.) There is consensus that schools should not benefit from having their students take less science, but assigning students to the lowest proficiency level distorts the proposed indicator.

The CST Math was added to the 2002 API Base. CST Math is a non-universal indicator similar to the CST Science. It was integrated into the API using the approach described

in Option 2. Students in grades 10 and 11 that had no score on the CST Math were included in the 2002 API Base but assigned a weight of 200. Although it is a small number of cases, it unfairly penalizes schools with high numbers of students taking higher level mathematics courses for which no CST Math exists. The approach assigns the lowest weight, even for a student taking a higher-level math course (e.g., AP Calculus) because no CST Math test is available and there is no way to determine the course enrollments of the student. This same difficulty would occur for CST Science integration. Results have yet to prove that mathematics participation has increased from implementation of this option.

Option 3: Include fraction of students with no scores as 200

As in Option 1, include the results of students with scores with no adjustments. However, the number of students with no score who are assigned a 200 are treated as a fraction of the students in the calculation. This “down-weights” the cases assigned a weight of 200 and results in a less punitive method for handling non-universal test results than that proposed in Option 2.

Comment: The advantage of this option is that it addresses the problem of non-universal test results and is less punitive than Option 2. However, the problem of non-universal test results is not totally resolved.

Option 4: Include students with no scores as 200 if over threshold

As in Option 1, include the results of students with scores with no adjustments. Students with no score *over a certain threshold* would be included in the API and assigned a weight of 200 (the lowest proficiency level). Students with no score *within the defined threshold* would not be counted in the API. For example, if the threshold were set at 60%, and a school had CST Science test scores for 50% of its base enrollment in grades 9-11, then 10% of the grade 9-11 base enrollment would be assigned to the lowest proficiency level. The remaining 40% of students with no scores would not be included in the API.

Comment: Although this option may share some of the punitive character of Options 2 and 3, it allows for a reasonable incentive for science course taking. Depending on where the threshold is set, the proposal has the potential to reflect both a healthy incentive and a technically sound methodology.

Option 5: Substitute students' NRT scores for no CST scores

As in Option 1, include the results of students with scores with no adjustments. For students with no score, use the CAT/6 norm-referenced test (NRT) science score in place of the CST Science score. The CAT/6 national percentile rank (NPR) score would be conservatively converted to an equivalent performance level, and performance level weighting factors would be determined. This would be designed to lower the CAT/6 scores to encourage taking CST Science. The indicator weights for the NRT and CST science may need to be combined.

Comment: This option is better than Option 4 because it would be based on actual test scores rather than upon imputation. The advantage of this option is that it is easily implemented because the NRT scores are readily available and already calculated as part of the API process. However, this method was considered by the TDG and the PSAA for integrating the CST in Mathematics into the 2002 API. It was not adopted for several

reasons. First, the NRT score would be double-counted since the NRT score is already included in a school's API. Second, using the NRT as a replacement for the CST MATH may change the meaning of the CST MATH indicator score to the extent that untested students were present at a school. For example, the CAT/6 is taken by students who may not be enrolled in a science course. This complicates the interpretation of the CST Science addition into the API. Third, this option would be problematic if the CAT/6 were ever to be eliminated.

Option 6: Course enrollment credit

If it is desirable that the API reward both course taking in the four subjects and performance on the CST Science, then define two indicators, each addressing only one of these objectives.

Comment: A course enrollment credit approach was proposed by the TDG and the PSAA for integrating the CST in Mathematics into the 2002 API. It was not adopted by the SBE because: (1) it would have created added complexity and workload requirements to the API yet would have a minimal effect on the API and (2) the use of this approach was not a cost-effective method for avoiding disincentives for high school mathematics course-taking. The same is likely to hold true for adding CST Science into the API.

Option 7: Higher level course credit

Supplementing one of the above proposals, give credit for advanced placement (AP) science scores at or above a certain level (for example, 3 or higher).

Comment: Including AP scores would solve a problem if AP students were not taking California Standards Tests in science. In this case, a school could be punished in the API depending on how the CST Science indicator is defined. This proposal assumes a problem that may or may not exist. Bringing in AP scores separately from the CST may be desirable, so long as this can be done equitably for all schools affected and the AP data can be matched with the STAR and California High School Exit Examination (CAHSEE) data.

Table 2 lists the advantages and disadvantages of the seven options for including the CST Science in the 2003 API Base.

Table 2
Advantages and Disadvantages of
Seven Options for Including CST Science in the 2003 API Base

Option	<i>Advantages</i>	<i>Disadvantages</i>
Option 1: Exclude students with no scores	<ul style="list-style-type: none"> ○ Easy to explain ○ Works well for universal indicators ○ Does not establish punitive measures for schools ○ Does not distort CST Science scores 	<ul style="list-style-type: none"> ○ Creates incentives for schools to steer low performing students away from standards-based science courses ○ API CST Science indicator score based only on students taking the test and will not reflect the entire school population ○ Provides no credit for students taking higher-level science courses ○ Setting a weight for a test that may be given to a portion of students at a school cannot be accurate and APIs between schools would not be comparable

Option 2: Include students with no scores as 200	<ul style="list-style-type: none"> Creates incentives for schools to encourage all students to take standards-based science courses 	<ul style="list-style-type: none"> Assigns lowest performance level to students who take science courses for which no CST Science exists May be too punitive for some schools Adds complexity to the API
Option 3: Include fraction of students with no scores as 200	<ul style="list-style-type: none"> Creates incentives for schools to encourage all students to take standards-based science courses 	<ul style="list-style-type: none"> Assigns lowest performance level to students who take science courses for which no CST Science exists Is less punitive than Option 2, but does not totally resolve non-universal test results problem Adds complexity to the API
Option 4: Include students with no scores as 200 if over threshold	<ul style="list-style-type: none"> Creates incentives for schools to encourage at least a minimum number of students to take standards-based science courses Has potential to reflect a good balance of incentive vs. punitive measures 	<ul style="list-style-type: none"> Does not totally resolve non-universality problem Adds complexity to the API Incentive for low-performers not to take science if above minimum percent
Option 5: Substitute students' NRT scores for no CST scores	<ul style="list-style-type: none"> Creates incentives for schools to encourage all students to take standards-based science courses Based on actual scores rather than imputation Only method that uses science test results for all students 	<ul style="list-style-type: none"> Double-counts the NRT scores for students with no scores if NRT and CST science weights are not combined Would need to switch to another alternative if NRT ever totally eliminated
Option 6: Course enrollment credit	<ul style="list-style-type: none"> Creates incentives for schools to encourage all students to take standards-based science courses 	<ul style="list-style-type: none"> Adds significant complexity to the API (more than the CST Math in the API) Likely to have a minimal effect on the API, as was the case for the CST Math Not cost-effective
Option 7: Higher level course credit	<ul style="list-style-type: none"> Creates incentives for schools to encourage students to take higher-level science courses (e.g., AP courses) 	<ul style="list-style-type: none"> Adds complexity to the API May pose problem to match data Affects only a small percent of students

The TDG recognizes that the problem of non-universal test results is likely to be greater for the CST Science than it is for the CST Math. This is because fewer students take the CST Science than the CST Math. Also, the requirements for taking science courses are less specific than those for taking mathematics courses. Students are not required for graduation to take a particular science course such as Chemistry, but all students are required to take Algebra for graduation. Science courses such as Environmental Science may meet the graduation requirement, but there is no CST Science for this discipline.

Recommendation: The TDG concluded that none of the seven options considered provide an optimal technical approach to address the problem of non-universal test results. Therefore, the TDG does not recommend including the CST Science in the API. The TDG was undecided about which option might be considered relatively the most technically sound. Nevertheless, if policy demands that the CST Science be included in the 2003 API Base, the TDG recommends that the weight of the CST Science indicator be set as low as possible.

Issue #3

If the CST Science is included in the 2003 API Base, should the inclusion of the CST Science in the API be maintained or eliminated once the Core Knowledge Science Test is included in the API?

Recommendation: If the CST Science were to be included in the 2003 API Base, the TDG believes the weight of the CST Science indicator should be set as low as possible. If the indicator weight were minimal, the TDG has no recommendation about whether to maintain or eliminate the CST Science from the API once the Core Knowledge Science Test is included in the API. This should instead be a policy decision of the SBE based upon consideration of recommendations by the PSAA Advisory Committee. If the indicator weight for the CST Science were substantial, the TDG recommends either reducing the indicator weight to a minimal level or eliminating the CST Science from the API.

Issue #4

When should the Core Knowledge Science Test be included in the API?

Recommendation: Based upon the current plans for development of a Core Knowledge Science Test, there appear to be few, if any, technical constraints that would limit including the test in the API, once the test is available. Therefore, the TDG recommends including the Core Knowledge Science Test in the API as soon as it is available. The elementary results for grade 5 could be incorporated into the API as early as 2004, and the middle and high school results could be incorporated as early as 2007. Adding the Core Knowledge Science Tests to the API will be easy technically because the test will be universally administered to all students at a grade level.

**2003 Academic Performance Index (API): Modifications:
Integrating Results from California's Standards-Based Tests in Science into the API; and,
Similar Schools and the API Growth Report**

Background: The purpose of this paper is to describe a proposed change in the Academic Performance Index (API) Growth Report, which the California Department of Education (CDE) would institute in the fall of 2003 for the 2003 API Growth Report. The CDE submitted an earlier version of this proposal to the Technical Design Group (TDG) and then to the Public Schools Accountability Act (PSAA) Advisory Committee. This earlier version was simply to add a median growth API of similar schools to the API Growth Report.

While the TDG raised no technical objections to the earlier proposal, members of the Advisory Committee expressed the concern that simply reporting the median growth API of similar schools failed to provide districts and schools with any type of context within which to evaluate the information. As a body, the Committee recommended that the CDE develop a strategy that would enable districts and schools to compare changes in the distribution of similar schools between the release of the base API report and the corresponding growth API report. In response, the CDE has modified its original proposal and re-submitted it to the TDG, which once again found no technical problems with it.

Proposal: The modified proposal is that the 2003 API Growth Report for each school should include:

- The median 2002 base API of the 100 similar schools that were used to generate each school's 2002 Base API similar schools ranking.
- The median 2003 growth API of the same 100 similar schools.²
- An electronic link to a list of the same 100 similar schools that would include the 2003 growth API of each school. The list would be sorted by the value of the 2003 growth API.

Pros: These report enhancements would:

- Boost the value of the growth report.
- Increase the utility of the similar schools concept.
- Provide demographic background for the school's performance as reflected by the growth API.

Cons: Reporting of this statistic could:

- Provide misleading information in case a school had experienced significant demographic change from one year to the next and failed to report this to the CDE.

² As noted earlier, the original CDE proposal included only the reporting of this statistic.

- Increase the potential for delay in the release of the API Growth Report, which currently occurs in September or October, because adding this statistic would involve a significant increase in the amount of processing needed to produce the report.

Recommendation: Districts and schools already are familiar with the concept of similar schools because of its use on the Base Report. The enhancement of the growth report would provide districts and schools with additional information that would be both useful and easy for them to understand.

The Attachment on page 3 demonstrates the potential value of this type of measure. In 2003 school ABC grows 20 points from 700 to 720 while the median value for the API of its 2002 similar schools group grows only 5 points from 780 to 785. If we merely re-ranked the similar schools by the 2003 growth API, school ABC will still be at rank 4. This would not reflect the progress that school ABC has made in closing the gap between its API and the median API for its similar schools group.

In contrast, the potential disadvantages of reporting such a measure are less certain. In the past two years, the CDE has received relatively few requests for invalidating growth APIs because of changes in school demographic characteristics. This assumed demographic stability is validated by very little observed annual fluctuation in the demographic characteristics used to construct the similar schools' grouping.

Regarding potential reporting delays, to comply with provisions of the NCLB, beginning in 2004 the CDE will probably release preliminary API growth reports in August beginning in 2004. This would include those API elements necessary to determining Adequate Yearly Progress (AYP) under the provisions of the No Child Left Behind Act of 2001. This in turn will decrease the negative consequences that might result from a delay in the release of the more formal API growth report, which currently occurs as late as October.

In conclusion, the likely advantages of the proposal outweigh the less certain disadvantages. Therefore, the CDE recommends adding these features to the 2003 API Growth Report.

Attachment

Similar Schools Example

		2002 Base API	2003 Growth API
Similar Schools Rank	10	School 1 - API 799 .	School 1 - API 804 .
	9	..	..
	8	..	..
	7	..	..
	6	..	..
	5	Median - API 780 .	Median - API 785 .
	4	School ABC - API 700 .	School ABC - API 720 .
	3	..	..
	2	..	..
	1	. School 100 -API 600	. School 100 - API 605